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QUAM: A SIMULATION MODEL FOR THE
NAVY QUICKTRANS SYSTEM USER'S MANUAL

DAVID W. TAYLOR NAVAL SHIP RESEARCH
AND DEVELOPMENT CENTER, BETHESDA, MD

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A SIMULATION MODEL FOR THE NAVY QUICKTRANS SYSTEM
USER'S MANUAL

by
Raymond E. Hall

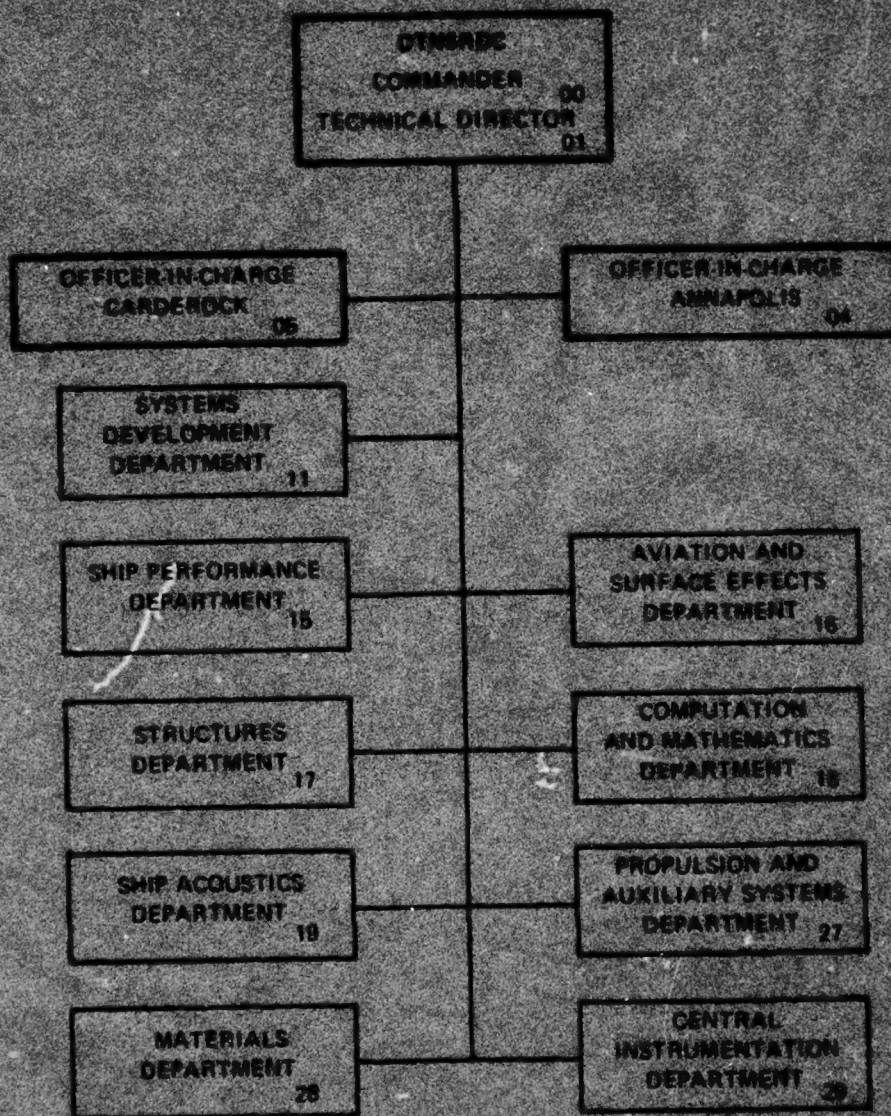
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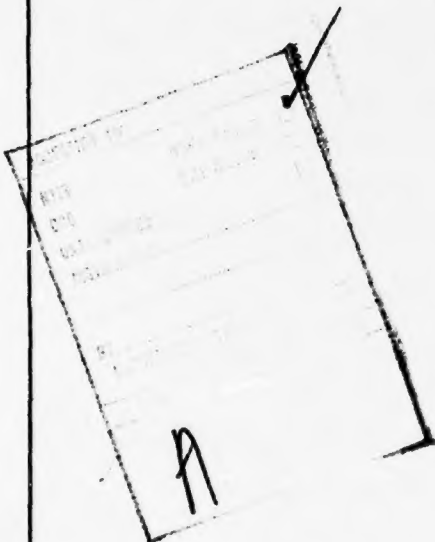
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costs. The execution routines compute the time-distance-tonnage relationships for the stated input data to establish cargo loaded, transloaded, and off-loaded at each terminal; utilization for both vehicles (by type) and routes; costs per ton-mile, ton-milage, and both route and system operating costs. The output can provide the entire histographic record and/or management summaries in desired formats for information at terminals, along route segments, routes and for the entire system.

The simulation has been used in the analysis of the requirements for servicing an expanded QUICKTRANS network.

This report describes the model's logic elements and all the inputs needed by QUAM.



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1. INTRODUCTION

1.1 BACKGROUND

QUICKTRANS¹ is the Navy air-truck transportation network, designed to provide a controlled, flexible, and responsive means of transporting urgently required cargo between terminals of major Navy interest within the continental United States (CONUS). The goal of the QUICKTRANS transport facility is to move high priority cargo between any two QUICKTRANS terminals in a time interval no greater than 48 hours. The QUICKTRANS transportation system utilizes both air and truck transport units and operates daily on predetermined time schedules and routes between commercial and military terminals.

Currently the information required to develop the QUICKTRANS route structure is computed manually at considerable expense in manpower and time. A need has thus existed for a more efficient and reliable method of determining QUICKTRANS route patterns and airlift requirements information for planning purposes. Accordingly, a simulation model, QUAM, has been developed to provide a computer-based approach to facilitate and reduce the time required for these calculations.

The QUICKTRANS system model has, since its development, been exercised for the sponsor, NAVSUP 052, for 1) purposes of debugging, orientation, and familiarization, 2) determining the management summary formats and their utility, 3) extending their in-house route analysis capabilities, and 4) forecasting their capabilities in meeting projected demands in FY 76 and 77.

1.2 PURPOSE

The QUICKTRANS Airlift Model (QUAM), a simulation model written in FORTRAN IV, depicts CONUS theater of operation. It is designed to forecast the QUICKTRANS system's cost, vehicle utilization, and route/schedule

¹"United States QUICKTRANS Airfreight System, STANDARD OPERATING PROCEDURES." Naval Systems Command, NAVSUP Publication 387, July 1971.

load factors for proposed routes, and transport units or vehicles. The goal of QUAM is to produce a more efficient and economical route-planning and vehicle-selection system. By employing QUAM, the analyst may predict the efficiency of route patterns and, in particular, route and segment load factors, cost per carried ton of cargo, cost per carried ton/mile of cargo, and utilization of vehicles.

1.3 METHOD

The solution to simulating the operation of QUICKTRANS for planning purposes may be approached in many ways. Because of the fixed route segment structure of QUICKTRANS, a static accumulation method was selected for this study.

Since the cargo flow is given with respect to origin and destination terminals and their related transload terminals, and the proposed route structure consists of flow patterns between terminals, the task of selecting routes and vehicles reduces to a comparison of available segment transport space and cargo space required. Cargo/route assignment is made with respect to the cargo delivery flow patterns and the number of route segments used to move cargo from its origin to destination terminals. Direct cargo movement from origin to destination terminals is considered first and remaining cargo movements are ordered by increasing number of transloads needed for delivery.

The projected cargo flow patterns are determined from historic cargo load data collected by the QUICKTRANS Center, Norfolk, Virginia, and analyzed and edited by the Logistics Group at DTNSRDC.

QUAM describes the nodes (terminals) and links (segments) within the QUICKTRANS system and is able to accommodate several types of planning problems. It incorporates node distance tables. Time-distance-tonnage relationships are computed for specified input and are presented in segment/management summaries.

The input data include node linkages (segments), routes (sequential aggregations of segments), vehicle characteristics and their numbers, nodes (terminals) and their characteristics, cargo quantities, transload points, and unit costs.

Execution of this simulation computes: the amount of cargo on-loaded, transloaded, and off-loaded at each node along every route; costs for cargo movement and handling; and the percentage of each vehicle's cargo capacity used along each route segment. The items calculated include vehicle load factors; cargo throughput at nodes, along segments and routes; ton-mileage figures; cost per ton-mile; and average distance of moved cargo (miles). Table 1 gives terminals currently considered by QUICKTRANS.

Costs computed by the model are of two types, terminal and travel. Travel cost is determined from the cost in dollars per statute mile for a given vehicle type multiplied by the distance traveled (in statute miles). Terminal costs include all expenses incurred by the vehicle while at the terminal; i.e., entry fees, vehicle-servicing charges, and cargo-handling costs.

TABLE 1 - QUICKTRANS TERMINALS

Program ID Number	Terminal Name	Transport Code Name
1	Quonset Point	NCO
2	Wilmington	ILG
3	Patuxent River	NHK
4	Norfolk	NGU
5	Charleston	CHS
6	Jacksonville	NIP
7	Patrick AFB	COF
8	MacDill AFB	MCF
9	Key West	NQX
10	Pensacola	NPA
11	Dallas	NBF
12	Indianapolis	IND
13	San Diego	NZY
14	Point Mugu	NTD
15	Lemoore	NLC
16	Alameda	NGZ
17	Paine Field	PAE
18	Boston	BOS
19	Philadelphia	PHL
20	McGuire	WRI
21	Dover	DOV
22	Washington, D.C.	DCA
23	Cherry Point	NKT
24	Albany	NAB
25	Corpus Christi	NGP
26	Long Beach	LGR
27	Travis AFB	SUU
28	McChord AFB	TCM
29	Whidbey Island	NUW
30	Bremerton	PWT

TABLE 1 - QUICKTRANS TERMINALS (Continued)

Program ID Number	Terminal Name	Transport Code Name
31	Atlanta	ATL
32	Red River	TXX
33	Tinker	OKC
34	Pueblo	PUB
35	Toole	SLC
36	Umatilla	PDT

2. DESCRIPTION OF INPUT DATA

2.1 DESCRIPTION OF INPUT CARDS

2.1.1 Identification Card (IDENT)

IDENT gives the computer run identification information. Its format is alpha-numeric, and it may have 1 to 27 characters.

2.1.2 General Information Card (GEN)

GEN gives the limits of variables to be input and the control constants.

NTERM		NROUTE		NITIN		NKGOGN		NVAT		CLAND		CCONVF		TCOST		ADJT		IT			
1	5	6	10	11	15	16	20	21	25	26	35	36	45	46	55	56	65	66	68	69	80

Variable	Format	Description
NTERM	I5	Number of terminals in simulation (1 to 99).
NROUTE	I5	Number of routes (1 to 40).
NITIN	I5	Number of itineraries, i.e., list of terminal numbers given in order of vehicle encounter. Used with route information (1 to 40).
NKGOGN	I5	Number of cargo flow entries (1 to 3000).
NVAT	I5	Number of vehicle types (1 to 9).
CLAND	F10.2	Cost (\$) per aircraft landing.
CCONVF	F10.2	Conversation factor, lb/cu ft of cargo.
TCOST	F10.2	Total terminal cost (\$).
ADJT	I2	Aircraft cost adjustment factor.
IT		Cargo flow table indicator; IT = 1, Table printed.

2.1.3 Terminal Code Cards (TERM)

The TERM cards give the three-letter transportation code for each terminal considered.

		CODE 1			CODE 2												CODE 18						
1	2			4	5	6	8											69	70			72	73	80

Variable	Format	Description
CODE 1-CODE "NTERM"	18A4	Three-letter terminal code.

2.1.4 Cargo Modification Card (PERC).

The PERC cards adjust the amount of cargo generated at each terminal without changing the original cargo generation input data. PERC gives the percent of increase or decrease of cargo originating at a given terminal. If there are no changes, cards are blank.

PERC at terminal 1	PERC at terminal 2	PERC at terminal 12	
1	6 7	12 13	65	72 3 80

Variable	Format	Description
PERC at terminal 1 to 99	12F6.0	Percent of increase or decrease of cargo at each originating terminal.

2.1.5 Load Factor Format Cards (CAPV).

The CAPV cards give the maximum load factor allowed for each route.

LOADF1	LOADF2	LOAD15	
1	5 6	10 11	71	75 76 80

Variable	Format	Description
LOADF1 ... LOADF40 for routes 1 to 40	15F5.0	Maximum load factor for each route

2.1.6 Distance Table Cards (DIST)


The DIST cards give the distance in miles between terminals. DIST cards contain packed data, three data items per word.

DIST1	DIST2	DIST3	DIST16	DIST17	DIST18	
1	4 5	8 9	12 13	60 61	64 65	68 69	72 73 80

Variable	Format	Description
DIST1,...,DIST99	6112	Distance in miles between terminals

2.1.7 Itinerary Cards (ITN)

The ITN cards give the terminals in order of encounter to be serviced on a route. The maximum number of terminals on a given itinerary is 20.

NTRN	TERM	TERM2	TERM20					
1	3	4	6	7	9	61	63	64	80

Variable	Format	Description
NTRN	I3	Number of terminals on this itinerary.
TERM1,...,TERM20	20I3	Terminals on itinerary in order of encounter.

2.1.8 Route Cards (RTE)

The RTE cards give all information necessary to describe the routes. The maximum number of routes is 40.

NTRIPS	ITN	ITY P E	RID	REPEAT	REPEAT	REPEAT	REPEAT	
1 8	9 10	11	12 14	15 28	29 42	43 56	57 70	71 80

Variable	Format	Description
NTRIPS	I10	Number of trips vehicle to make on the route in the time period considered. Decimal representation ΔΔΔΔΔΔ.ΔΔ
ITN	I2	Itinerary number.
ITYPE	I1	Vehicle type
RID	I3	Route identification number.

2.1.9 Vehicle Cards (VEH)

The VEH cards give all information necessary to describe lift capabilities of each vehicle. The maximum number of vehicle types allowed is 9.

CAPACV	CAPACW	CSTM	VNAM	REPEAT					
1 10	11 20	21 30	31 36	37 72	83				80

Variable	Format	Description
CAPACV	F10.0	Usable space in cu ft
CAPACW	F10.0	Maximum weight in lb
CSTM	F10.0	Cost per mile to operate vehicle, \$/mi
VNAM	A6	Vehicle description name. If vehicle is a truck, "TRUCK" must appear in this field.

2.1.10 Cargo Flow Cards (CARG)

The CARG cards give the quantity of cargo to be shipped from a generation (origin) terminal and delivered at a destination terminal. CARG cards also specify all terminals at which the cargo is to change routes. These terminals are defined as transload terminals. The maximum number of cargo generations allowed is 1000.

					CTONS	REPEAT	REPEAT		
ITRNS3	ITRNS2	ITRNS1	IORIG	IDES					
1 4 5 6	7 8 9 10	11 12 13 14	15 22	23 44	45 66	67	80		

Variable	Format	Description
ITRNS1-ITRNS3	3I2	Transload terminals in order of encounter
IORIG	I2	Originating terminal
IDES	I2	Final destination terminal
CTONS	F8.2	Tons of cargo to be shipped

2.2 SAMPLE INPUT DECK SETUP

Figure 1 shows arrangement of the input deck.

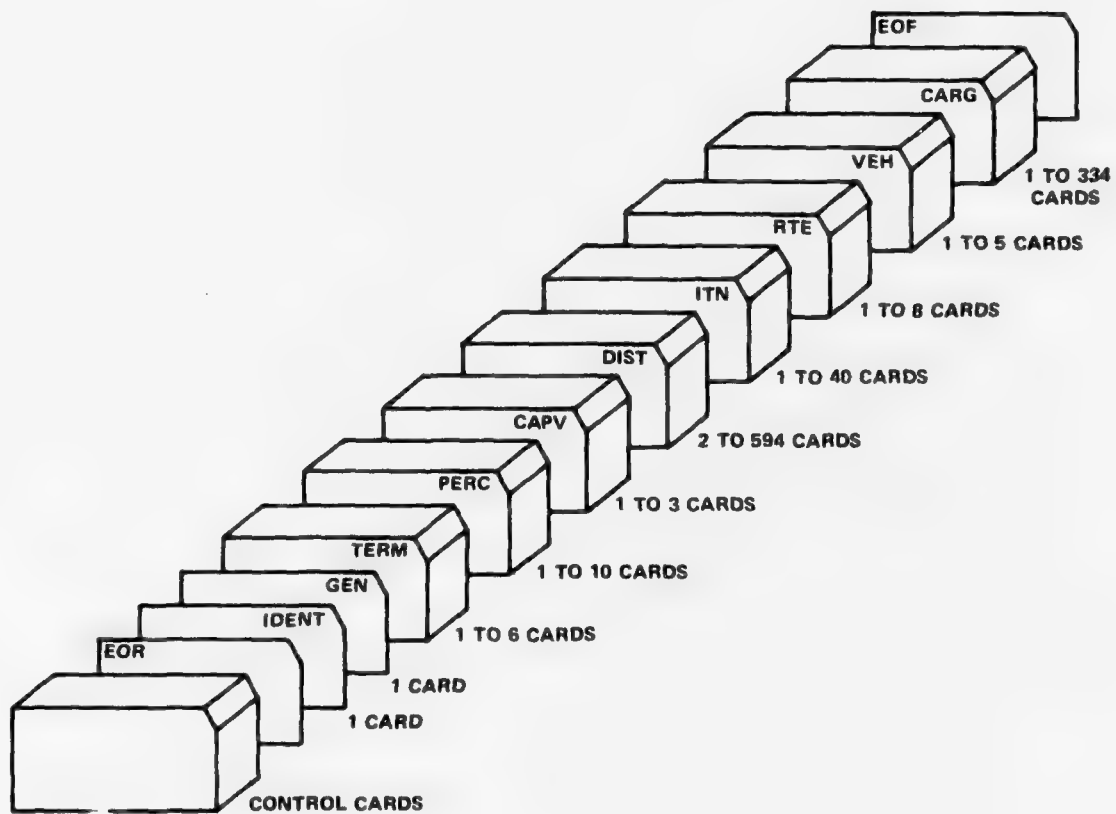


Figure 1 - Input Deck Setup

3. OUTPUT

QUAM output consists of the following parts:

- (a) Cargo flow table
- (b) Routing Error trace - gives all entries in the cargo flow table for which routing from origin to destination terminals cannot be accomplished.
- (c) System Cargo Summary
- (d) Segment Operations Summary - (columns given as "ton/miles Overflow Upon Departure" and "Pounds Overflow Upon Departure" give ton/miles and pounds of cargo assigned to route in excess of an 80% load factor).
- (e) Aircraft Management Summary
- (f) Truck Management Summary
- (g) Overall Management Summary
- (h) Cargo Movement Diagnostics - specifies computer representation of incomplete cargo shipment.

4. COMPUTER SYSTEM INFORMATION

QUAM is written in FORTRAN IV to run on the CDC 6600 computer. Average running time is 9 seconds CPU time at a cost of \$3.00 per run. QUAM has been expanded to consider a maximum of 99 terminals and 40 routes. If the above variable limits are reduced to an average QUICKTRANS case of 20 terminals and 10 routes, core allocation can be reduced to 60K.

APPENDIX A
PROGRAM LISTING

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PROGRAM QUAM (INPUT,OUTPUT,TAPE5=INPUT,TAPE6= OUTPUT,TAPE7)	QAM	5
DIMENSION ITNAM(99),IDIST(99,33),CAPACV(9),CAPACH(9),CSTR(9),	QAM	10
1 NPITIN(40),NPITN1(40,20)	QAM	15
2 KGOGN1(7000),CGOGN2(7000),CGOGN3(7000),ISEG(40,19,2),SEGA(40,19),	QAM	20
3 SEGU(40,19),SHTP(99),GEN(99),DEL(99),TRANS(99),JSEG(40,19,3)	QAM	25
5,IDRUN(12),VNAH(9),VEH(2)	QAM	30
4,RMI(40),THAV(40),THUS(40),TEMP(9),STAN(99),TOT(10),US(99)	QAM	35
6,VEHS(9,8),VSUMC(9),CAPCV(40),PERIC(99),CR(9)	QAM	40
DATA VEH/6HAIRCRF,6MYRUCK /	QAM	45
READ(5,7777) IDRUN	QAM	50
7777 FORMAT(12A6)	QAM	55
READ(5,1000) NTERM,NROUTE,NITIN,NKGOGN,NVAT,CLAND,CCONVF,	QAM	60
1 TCOST,ADJT,IT	QAM	65
1000 FORMAT(5I5,4F10.2,I2)	QAM	70
READ(5,1001) (ITNAM(I),I=1,NTERM)	QAM	75
1001 FORMAT(19A4)	QAM	80
READ(5,1007) (PERIC(I),I=1,NTERM)	QAM	85
1007 FORMAT(12F6.0)	QAM	90
READ(5,1999) (CAPCV(I),I=1,NROUTE)	QAM	95
1999 FORMAT(15F5.0)	QAM	100
IC=FLOAT(NTERM)/3.+.9	QAM	105
DO 10 I=1,NTERM	QAM	110
10 READ(5,1002) (IDIST(I,J),J=1,IC)	QAM	115
1002 FORMAT(6I12,AX)	QAM	120
READ(5,1003) (NPITIN(I),NPITN1(I,J),J=1,20),I=1,NITIN)	QAM	125
1003 FORMAT(2I13,17X)	QAM	130
READ(5,1004) (IRoute(I),I=1,NROUTE)	QAM	135
1004 FORMAT(5I14,10X)	QAM	140
READ(5,1005) (CAPACV(I),CAPACH(I),CSTR(I),VNAH(I),I=1,NVAT)	QAM	145
1005 FORMAT(2(3F10.0,A6))	QAM	150
READ(5,1006) (KGOGN1(I),CGOGN2(I),I=1,NKGOGN)	QAM	155
1006 FORMAT(3(I14,F8.2))	QAM	160
DO 242 I=1,NKGOGN	QAM	165
IORIG=MOD(KGOGN1(I)/100,100)	QAM	170
242 CGOGN2(I)=CGOGN2(I)+PERIC(IORIG)*CGOGN2(I)	QAM	175
IF(IT.EQ.1) CALL TABLE(NTERM,ITNAM,NKGOGN,KGOGN1,CGOGN2,IDENT)	QAM	180
CALL LINKS(NITIN, NKGOGN,NPITIN,NPITN1,KGOGN1,ITNAM)	QAM	185
ICOUNT=0	QAM	190
DO 240 K=1,NKGOGN	QAM	195
IORIG=MOD(KGOGN1(K)/100,100)	QAM	200
CGOGN3(K)=(CGOGN2(K)*2000.)/CCONVF	QAM	205
CGEN=CGEN+CGOGN3(K)	QAM	210
GEN(IORIG)=GEN(IORIG)+CGOGN3(K)	QAM	215
IDES=MOD(KGOGN1(K),100)	QAM	220
IDES1=MOD(KGOGN1(K)/10000,100)	QAM	225
IDES2=MOD(KGOGN1(K)/1000000,100)	QAM	230
IDES3=MOD(KGOGN1(K)/10**8,100)	QAM	235
IF(IDES1.LE.0) GO TO 240	QAM	240
IF(IDES2.NE.0) GO TO 241	QAM	245
ICOUNT=ICOUNT+1	QAM	250
KGOGN1(NKGOGN+ICOUNT)=10000000000+IDES+IDES1*100000000	QAM	255
CGOGN3(NKGOGN+ICOUNT)=CGOGN3(K)	QAM	260
GO TO 240	QAM	265
241 IF(IDES3.NE.0) GO TO 141	QAM	270

ICOUNT=ICOUNT+1	QAM	275
KGOGN1(NKGOGN+ICOUNT)=10000000000+IDES1*100000000+IDES2*10000	QAM	280
CGOGN3(NKGOGN+ICOUNT)=CGOGN3(K)	QAM	285
ICOUNT=ICOUNT+1	QAM	290
KGOGN1(NKGOGN+ICOUNT)=IDES+IDES2*100000000	QAM	295
CGOGN3(NKGOGN+ICOUNT)=CGOGN3(K)	QAM	300
GO TO 240	QAM	305
141 KGOGN1(K)=MOD(KGOGN1(K),1000000)	QAM	310
ICOUNT=ICOUNT+1	QAM	315
KGOGN1(NKGOGN+ICOUNT)=10**10+IDES1*10**8+IDES2*10000	QAM	320
CGOGN3(NKGOGN+ICOUNT)=CGOGN3(K)	QAM	325
ICOUNT=ICOUNT+1	QAM	330
KGOGN1(NKGOGN+ICOUNT)=IDES2*10**8+IDES3*10000	QAM	335
CGOGN3(NKGOGN+ICOUNT)=CGOGN3(K)	QAM	340
ICOUNT=ICOUNT+1	QAM	345
KGOGN1(NKGOGN+ICOUNT)=10**10+IDES3*10**8+IDES	QAM	350
CGOGN3(NKGOGN+ICOUNT)=CGOGN3(K)	QAM	355
240 CONTINUE	QAM	360
NKGOGN=NKGOGN+ICOUNT	QAM	365
DO 200 L=1,4	QAM	370
DO 202 J=1,NROUTE	QAM	375
DAY=FLOAT(IROUTE(J)/1000000)*.01	QAM	380
204 ITN=MOD(IROUTE(J)/10000,100)	QAM	385
ITYPE=MOD(IROUTE(J)/1000,10)	QAM	390
TOTL=CAPACW(ITYPE)*DAY	QAM	395
IF(L.EQ.1) TOTL=TOTL*.50	QAM	400
NIT=NPITIN(ITN)	QAM	405
IF(L.NE.1) GO TO 325	QAM	410
JTN=NIT-1	QAM	415
DO 205 K=1,JTN	QAM	420
TSEG(J,K,1)=CAPACW(ITYPE)*DAY *CAPCV(J) +.5	QAM	425
SEGA(J,K)=SEGA(J,K)+CAPACV(ITYPE)*DAY +.5	QAM	430
205 TSEG(J,K,2)=CAPACV(ITYPE)*DAY *CAPCV(J)	QAM	435
325 DO 206 K=1,NKGOGN	QAM	440
IF(CGOGN3(K).LE.0.0) GO TO 206	QAM	445
NORIG=0	QAM	450
NDEL=0	QAM	455
NTRANS=0	QAM	460
NTRAN=0	QAM	465
IORIG=MOD(KGOGN1(K)/100,100)	QAM	470
IORIGT=MOD(KGOGN1(K)/100000000,100)	QAM	475
IDEST=MOD(KGOGN1(K),100)	QAM	480
IDESTT=MOD(KGOGN1(K)/10000,100)	QAM	485
GO TO (501,502,503, 555),L	QAM	490
501 IF(IORIGT.NE.0) GO TO 206	QAM	495
IF(IDESTT.NE.0) GO TO 206	QAM	500
GO TO 555	QAM	505
502 IF(IORIGT.EQ.0.AND.IDESTT.NE.0) GO TO 555	QAM	510
GO TO 206	QAM	515
503 IF(IORIGT.NE.0.AND.IDESTT.NE.0) GO TO 555	QAM	520
GO TO 206	QAM	525
555 ICHECK=KGOGN1(K)/10000000000	QAM	530
ISTART=0	QAM	535
IEND=0	QAM	540
DO 207 KK=1,NIT	QAM	545

NTRM=NPITN1(ITN, KK)	QAM 550
IF(ISTART.NE.0) GO TO 210	QAM 555
IF(IORIG.EQ.NTRM) GO TO 209	QAM 560
IF(IORIGT.EQ.NTRM) GO TO 219	QAM 565
GO TO 207	QAM 570
209 ISTART=KK	QAM 575
NORIG=NTRM	QAM 580
GO TO 207	QAM 585
219 ISTART=-KK	QAM 590
NORIG=NTRM	QAM 595
IF(ICHECK.LE.0) NTRAN=NTRM	QAM 600
GO TO 207	QAM 605
210 IF(IDEST.EQ.NTRM) GO TO 211	QAM 610
IF(IDESTT.EQ.NTRM) GO TO 221	QAM 615
GO TO 207	QAM 620
211 TEND=KK	QAM 625
NDEL=NTRM	QAM 630
GO TO 226	QAM 635
221 IEND=-KK	QAM 640
IF(ICHECK.LE.0) NTRANS=NTRM	QAM 645
GO TO 226	QAM 650
207 CONTINUE	QAM 655
GO TO 206	QAM 660
226 LIM1=IABS(ISTART) +1	QAM 665
LIM2=IABS(IEND)-1	QAM 670
DO 505 KK=LIM1, LIM2	QAM 675
IF(NORIG.NE.NPITN1(ITN, KK)) GO TO 505	QAM 680
IF(ISTART.GT.0) ISTART=KK	QAM 685
IF(ISTART.LT.0) ISTART=-KK	QAM 690
GO TO 227	QAM 695
505 CONTINUE	QAM 700
227 II=IABS(ISTART) +1	QAM 705
JJ=IABS(IEND)-1	QAM 710
WT=ISEG(J, II-1, 1)	QAM 715
CUBES=ISEG(J, II-1, 2)	QAM 720
IF(JJ.LT.II) GO TO 436	QAM 725
DO 230 KK=II, JJ	QAM 730
IF(WT.GT.ISEG(J, KK, 1)) WT=ISEG(J, KK, 1)	QAM 735
IF(CUBES.GT.ISEG(J, KK, 2)) CUBES=ISEG(J, KK, 2)	QAM 740
230 CONTINUE	QAM 745
436 IF(L.EQ.1.AND.WT.GT.TOTL) WT=TOTL	QAM 750
IF(WT/CCONVF.LT.CUBES) CUBES=WT/CCONVF	QAM 755
II=II-1	QAM 760
IF(CUBFS.LT.CGOGN3(K)) GO TO 228	QAM 765
CUBES=CGOGN3(K)	QAM 770
CGOGN3(K)=0.	QAM 775
GO TO 229	QAM 780
228 CGOGN3(K)=CGOGN3(K)-CUBES	QAM 785
229 ICUBES=CUBFS+.5	QAM 790
JSEG(J, II, 1)=JSEG(J, II, 1)+ICUBES	QAM 795
IF(IEND.GT.0) JSEG(J, JJ, 2)=JSEG(J, JJ, 2)+ICUBES	QAM 800
IF(IEND.LT.0) JSEG(J, JJ, 3)=JSEG(J, JJ, 3)+ICUBES	QAM 805
DO 231 KK=II, JJ	QAM 810
ISEG(J, KK, 1)=ISEG(J, KK, 1)-CUBES*CCONVF	QAM 815
ISEG(J, KK, 2)=ISEG(J, KK, 2)-CUBES	QAM 820

231	SEGU(J,KK)=SEGU(J,KK)+CUBES	QAM	825
	LM1=IABS(ISTART)	QAM	830
	LM2=IABS(IEND)-1	QAM	835
	DO 20 LK=LM1,LM2	QAM	840
	LM3=LM1+1	QAM	845
	LM4=LM2+1	QAM	850
	TORG=NPITN1(ITN,LK)	QAM	855
	DO 25 MM=LM3,LM4	QAM	860
	IDES=NPITN1(ITN,MM)	QAM	865
25	WRITE(7,7000) IORG,IDES,CUBES	QAM	870
7000	FORMAT(2I5,F10.2)	QAM	875
20	CONTINUE	QAM	880
	IF(ISTART.GT.0)	QAM	885
1	SHIP(NORIG)=SHIP(NORIG)+CUBES	QAM	890
	IF(NDEL.NF.0) DEL(NDEL)=DEL(NDEL)+CUBES	QAM	895
	IF(NTRANS.NF.0) TRANS(NTRANS)=TRANS(NTRANS)+CUBES	QAM	900
	IF(NTRAN.NE.0) TRANS(NTRAN)=TRANS(NTRAN)+CUBES	QAM	905
	IF(NTRAN.NE.0) CTRANS=CTRANS+CUBES	QAM	910
	IF(NTRANS.NF.0) CTRANS=CTRANS +CUBES	QAM	915
	IF(NDEL.NE.0) COEL=COEL+CUBES	QAM	920
	CSHIP=CSHIP+CUBES	QAM	925
205	CONTINUE	QAM	930
202	CONTINUE	QAM	935
200	CONTINUE	QAM	940
	ENDFILE 7	QAM	945
	WRITE(6,4000) IORUN	QAM	950
4000	FORMAT(1H1,4X,12A6	QAM	955
1	.25(/),50X,'QUICKTRANS AIR-LIFT MODEL'//60X,'(QUAM)')	QAM	960
	WRITE(6,2006)	QAM	965
	DO 400 I=1,NTERM	QAM	970
	STAN(I)=0	QAM	975
	DO 415 JJ=1,NKGOGN	QAM	980
	IF(CGOGN3(JJ).LE.0.0) GO TO 415	QAM	985
	IF(MOD(KGOGN1(JJ)/100 ,100).NE.I) GO TO 416	QAM	990
	STAN(I)=STAN(I)+CGOGN3(JJ)	QAM	995
	GO TO 415	QAM	1000
416	IF(MOD(KGOGN1(JJ)/100000000,100).EQ.I) US(I)=US(I)+CGOGN3(JJ)	QAM	1005
415	CONTINUE	QAM	1010
	TEMP(6)=US(I)*CCONVF	QAM	1015
	TEMP(5)=STAN(I) *CCONVF	QAM	1020
	TEMP(3)=GFN(I)*CCONVF	QAM	1025
	TEMP(2)=SHIP(I)*CCONVF	QAM	1030
	TEMP(1)=DEL(I)*CCONVF	QAM	1035
	TEMP(4)=TRANS(I)*CCONVF	QAM	1040
	DO 500 LL=1,6	QAM	1045
500	TOT(LL)=TOT(LL)+TEMP(LL)	QAM	1050
400	WRITE(6,2007) ITNAM(I),(TEMP(J),J=1,6)	QAM	1055
	WRITE(6,3000) (TOT(LL),LL=1,6)	QAM	1060
	DO 300 I=1,NROUTE	QAM	1065
	RMI(I)=0	QAM	1070
	THAV(I)=0	QAM	1075
	THUS(I)=0	QAM	1080
	J=MOD(ROUTE(I),1000)	QAM	1085
	K=MOD(ROUTE(I)/1000,10)	QAM	1090
	WRITE(6,2000) J ,VNAM(K)	QAM	1095

ITN=	MOD(ROUT(I)/10000,100)	QAM 1100
NT=	NPITN(ITN) -1	QAM 1105
DO 302 JJ=1,4		QAM 1110
302 TOT(JJ)=0.0		QAM 1115
DO 301 J=1,NT		QAM 1120
TORIG=NPITN1(ITN,J)		QAM 1125
TDES=NPITN1(ITN,J+1)		QAM 1130
306 TEMP(1)=FLOAT(ROUT(I)/1000000)*.01		QAM 1135
K=FLOAT(IDES)/3.*.9		QAM 1140
ITYPE=MCD(ROUT(I)/1000,10)		QAM 1145
M=MOD(IDES,3)		QAM 1150
IF(M.LE.0) M=3		QAM 1155
TEMP(2)=MOD(IDIST(IORIG,K)/10000**(M-1),10000)		QAM 1160
TEMP(3)=CAPACW(ITYPE) * TEMP(1)		QAM 1165
RMI(I)=RMI(I)+TEMP(2)*TEMP(1)		QAM 1170
TEMP(4)=TEMP(2)*TEMP(3)/2000.		QAM 1175
TEMP(5)=SEGU(I,J)*CCONVF		QAM 1180
THAV(I)=THAV(I)+TEMP(4)		QAM 1185
TEMP(6)=TEMP(5)*TEMP(2)/2000.		QAM 1190
THUS(I)=THUS(I)+TEMP(6)		QAM 1195
IF(TEMP(2).GT.0.0) TEMP(7)=TEMP(6)/TEMP(4)*100.		QAM 1200
TEMP(8)=0.		QAM 1205
IF(TEMP(4)*.8.LE.TEMP(6)) TEMP(8)=TEMP(6)-(1.8*TEMP(4))		QAM 1210
IF(TEMP(2).LE.0.0) GO TO 301		QAM 1215
TEMP(9)=TEMP(8)*2000. /TEMP(2)		QAM 1220
DO 303 JJ=1,8		QAM 1225
IF(JJ.EQ.6) GO TO 303		QAM 1230
TOT(JJ)=TOT(JJ)+TEMP(JJ+1)		QAM 1235
303 CONTINUE		QAM 1240
301 WRITE(6,2001) ITNAM(IORIG),ITNAM(IDES), (TEMP(L),L=1,9)		QAM 1245
IF(THAV(I).GT.0) TOT(6)=THUS(I)/THAV(I)*100.		QAM 1250
WRITE(6,2011) (TOT(J),J=1,8)		QAM 1255
2011 FORMAT('//5X,*TOTAL*,16X,F6.0,1X,2(2X,F12.0),2F12.0,4X,F8.3,		QAM 1260
1 F14.0,2X,F14.0)		QAM 1265
WRITE(6,2002)		QAM 1270
ON=0		QAM 1275
OFF=0		QAM 1280
DO 318 LL=1,6		QAM 1285
318 TOT(LL)=0		QAM 1290
NT=NT+1		QAM 1295
DO 309 J=1,NT		QAM 1300
IORIG=NPITN1(ITN,J)		QAM 1305
TEMP(2)=FLOAT(JSEG(I,J,1)) *CCONVF		QAM 1310
IF(J.EQ.1) SAVE=TEMP(2)		QAM 1315
TEMP(3)=SAVE		QAM 1320
TEMP(1)=0		QAM 1325
IF(J.EQ.1) GO TO 315		QAM 1330
TEMP(1)=FLOAT(JSEG(I,J-1,2)+JSEG(I,J-1,3))*CCONVF		QAM 1335
315 OFF=OFF+TEMP(1)		QAM 1340
ON=ON+TEMP(2)		QAM 1345
TEMP(5)=0		QAM 1350
TEMP(6)=0		QAM 1355
SAVE =ON-OFF-FLOAT(JSEG(I,J,2)+JSEG(I,J,3))*CCONVF		QAM 1360
321 TEMP(4)=ON-OFF		QAM 1365
IF(J.EQ.1) GO TO 320		QAM 1370

TEMP(5)=FLOAT(JSFG(I,J-1,2))*CCONVF	QAM 1375
TEMP(6)=FLOAT(JSFG(I,J-1,3))*CCONVF	QAM 1380
320 DO 319 LL=1,6	QAM 1385
319 TOT(LL)=TOT(LL)+TEMP(LL)	QAM 1390
309 WRITE(6,2003) ITNAM(IORIG),	QAM 1395
WRITE(6,2009) (TOT(LL),LL=1,6)	QAM 1400
300 CONTINUE	QAM 1405
TMD=0	QAM 1410
DO 326 K=1,2	QAM 1415
DO 327 LL=1,10	QAM 1420
327 TOT(LL)=0.0	QAM 1425
WRITE(6,2010) VEH(K)	QAM 1430
2010 FORMAT(1H1,4X,A6,* REPORT*//)	QAM 1435
WRITE(6,2004)	QAM 1440
DO 316 I=1,NROUTE	QAM 1445
ITYPE=MOD(IROUTE(I)/1000,10)	QAM 1450
CR(ITYPE)=CSTR(ITYPE)	QAM 1455
IF(K.EQ.1.AND.VNAM(ITYPE).EQ.VFH(2)) GO TO 316	QAM 1460
IF(K.EQ.2.AND.VNAM(ITYPE).NE.VEH(2)) GO TO 316	QAM 1465
NAME=MOD(IROUTE(I),1000)	QAM 1470
FEE=0.	QAM 1475
TC=0	QAM 1480
DAY=FLOAT(IROUTE(I)/1000000)*.01	QAM 1485
ITN=MOD(IROUTE(I)/10000,100)	QAM 1490
LAND=(NPITIN(ITN)-1)*DAY	QAM 1495
FL=TMUS(I)/THAV(I)*100.	QAM 1500
TMC=0.	QAM 1505
TM=0.0	QAM 1510
IF(VEH(2).EQ.VNAM(ITYPE)) GO TO 317	QAM 1515
TM=RMI(I)*CSTR(ITYPE)	QAM 1520
FEE=CLAND*FLOAT(LAND)	QAM 1525
GO TO 1317	QAM 1530
317 TM=CSTR(ITYPE)*DAY	QAM 1535
CR(ITYPE)=TM/RMI(I)	QAM 1540
1317 TC=FEE+TM	QAM 1545
CSTSYS=CSTSYS+TC	QAM 1550
TMD=TMD+TMUS(I)	QAM 1555
IF(TMUS(I).GT.0.0) TMC=TC/TMUS(I)	QAM 1560
IF(THAV(I).GT.0) THAC=TC/THAV(I)	QAM 1565
TOT(1)=TOT(1)+LAND	QAM 1570
TOT(2)=TOT(2)+RMI(I)	QAM 1575
TOT(3)=TOT(3)+THAV(I)	QAM 1580
TOT(4)=TOT(4)+TMUS(I)	QAM 1585
TOT(6)=TOT(6)+TM	QAM 1590
TOT(7)=TOT(7)+FEE	QAM 1595
TOT(8)=TOT(8)+TC	QAM 1600
VSUMC(ITYPE)=VSUMC(ITYPE)+TC	QAM 1605
VEHS(ITYPE,1)=VEHS(ITYPE,1)+LAND	QAM 1610
VEHS(ITYPE,2)=VEHS(ITYPE,2)+RMI(I)	QAM 1615
VEHS(ITYPE,3)=VEHS(ITYPE,3)+THAV(I)	QAM 1620
VEHS(ITYPE,4)=VEHS(ITYPE,4)+TMUS(I)	QAM 1625
VEHS(ITYPE,6)=VEHS(ITYPE,6)+TM	QAM 1630
VEHS(ITYPE,7)=VEHS(ITYPE,7)+FEE	QAM 1635
VEHS(ITYPE,8)=VEHS(ITYPE,8)+TC	QAM 1640
WRITE(6,2005) NAME, LAND, ITYPE, RMI(I), THAV(I), TMUS(I), FL,	QAM 1645

1 CR(I,TYPE),TM,FEE,TC,TMAC,TMC	QAM 1650
316 CONTINUE	QAM 1655
IF (TOT(3).GT.0) TOT(9)=TOT(8)/TOT(3)	QAM 1660
IF (TOT(4).GT.0) TOT(10)=TOT(8)/TOT(4)	QAM 1665
IF (TOT(3).GT.0) TOT(5)=TOT(4)/TOT(3)*100.	QAM 1670
WRITE(6,2012) (TOT(J),J=1,10)	QAM 1675
2012 FORMAT(/,5X,*TOTAL*,1X,F6.0,4X,3F11.0,2X,F6.2,7X,F12.2,F10.0,	QAM 1680
1 10X,F10.0,1X,2F10.3)	QAM 1685
IF (K.NE.1) GO TO 326	QAM 1690
COSTA=ADJT*TOT(8)	QAM 1695
TOT(8)=TOT(8)+COSTA	QAM 1700
CSTSYS=CSTSYS+COSTA +TCOST	QAM 1705
WRITE(6,999) ADJT,COSTA,TOT(8)	QAM 1710
999 FORMAT(/,5X,*AIRCRAFT COST ADJUSTMENT FACTOR =*,F10.3,	QAM 1715
1 *,COST INCREASE =*,F15.3,*, TOTAL AIRCRAFT COST =*,F15.3)	QAM 1720
326 CONTINUE	QAM 1725
DO 888 KK=1,10	QAM 1730
888 TOT(KK)=0	QAM 1735
WRITE(6,2013)	QAM 1740
DO 329 JJ=1,NVAT	QAM 1745
IF (VEHS(JJ,3).GT.0) TEMP(1)=VSUMC(JJ)/VEHS(JJ,3)	QAM 1750
IF (VEHS(JJ,4).GT.0) TEMP(2)=VSUMC(JJ)/VEHS(JJ,4)	QAM 1755
IF (VEHS(JJ,3).GT.0) VEHS(JJ,5)=VEHS(JJ,4)/VEHS(JJ,3)*100.	QAM 1760
DO 655 KK=1,8	QAM 1765
655 TOT(KK)= TOT(KK)+VEHS(JJ,KK)	QAM 1770
329 WRITE(6,2014) VNAM(JJ),(VFHS(JJ,KK),KK=1,5), CR(JJ)	QAM 1775
1,(VEHS(JJ,KK),KK=6,8),TEMP(1),TEMP(2)	QAM 1780
WRITE(6,5555) TCOST,COSTA	QAM 1785
5555 FORMAT(92X,1H*,F8.0,1H*,F11.0,*, (TAX ADJ)*)	QAM 1790
TOT(5)=TCT(4)/TOT(3)*100.	QAM 1795
TEMP(1)=TOT(6)/TOT(2)	QAM 1800
TOT(8)=TCT(4)+COSTA +TCOST	QAM 1805
TOT(9)=TCT(8)/TOT(3)	QAM 1810
TOT(10)=TOT(8)/TOT(4)	QAM 1815
WRITE(6,4444) (TOT(KK),KK=1,5),TEMP(1),(TOT(KK),KK=6,7)	QAM 1820
1,TCOST,(TOT(KK),KK=8,10)	QAM 1825
4444 FORMAT(/,4X,*TOTAL*,F9.0,F11.0,1X,2F12.0,2X,F6.2,1X,F7.4,F13.2,	QAM 1830
1 F10.0,F8.0,F12.0,1X,2F10.3)	QAM 1835
2013 FORMAT(1H1,4X,*MANAGEMENT SUMMARY*/5X,18 (1H-)/57X,*LOAD*,	QAM 1840
13X,*RATE*,6X,*TOTAL*/5X,*V/A*,14X,*MILES*,3X,2(3X,*TON/MILES*),2X,	QAM 1845
2*FACTOR*,2X,*PER*,6X,*MILEAGE*,4X,*LANDING *,2X,*TERMINAL*,3X,	QAM 1850
4*TOTAL*,2(3X,*TON/MILES*)/	QAM 1855
45X,*TYPE*,4X,*STOPS*,3X,	QAM 1860
5*TRAVELFD*,4X,*AVAILABLE*,5X,*MOVED*,4X,*ACHVED*,2X,*MILE*,6X,	QAM 1865
6*COST*,8X,*FEES*,2(5X,*COSTS*),3X,* (AV) COST*,3X,* (MV) COST*)	QAM 1870
2014 FORMAT(4X,A6,F8.0, F11.0,1X,2F12.0,2X,	QAM 1875
1F6.2,1X,F7.4,F13.2,F10.0,8X,F12.0,1X,2F10.3)	QAM 1880
TEMP(1)=CGFM*CCONVF	QAM 1885
TEMP(2)=CSHIP*CCONVF	QAM 1890
TEMP(3)=CDEL*CCONVF	QAM 1895
TEMP(4)=CTRANS*CCONVF	QAM 1900
TEMP(5)=CSTSYS	QAM 1905
TEMP(6)=CSTSYS/TMD	QAM 1910
TEMP(7)=CSTSYS/(TEMP(3)/2000.)	QAM 1915
WRITE(6,2008) (TEMP(J),J=1,7)	QAM 1920

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2006 FORMAT(///5X,*TOTAL POUNDS GENERATED = * ,F20.2/5X, QAM 1925
1 *TOTAL POUNDS SHIPPED = * ,F20.2/5X,*TOTAL POUNDS DELIVERED = *, QAM 1930
2F12.2/5X,*TOTAL POUNDS TRANSLOADED = *F20.2/5X, QAM 1935
3*TOTAL SYSTEM COST (IN DOLLARS) = *,F20.4/5X,*TOTAL COST PER TON/HQAM 1940
4ILE = *,F12.4/5X,*TOTAL COST PER TON = *,F12.4) QAM 1945
2002 FORMAT(///8X,*TERMINAL*,6X, QAM 1950
1*OFF LOAD*,4X,*ON LOAD*,4X,* THRU *,4X,*DEPART*, QAM 1955
2 4X,*DELVY UNLOAD*,4X,*TRANSLOAD*/ QAM 1960
223X, *POUNDS*,6X,*POUNDS*,4X,*POUNDS*, QAM 1965
3 4X,*POUNDS*7X,*POUNDS*,8X,*POUNDS*) QAM 1970
2009 FORMAT(/// 5X,*TOTAL*,7X, QAM 1975
1 F12.0,F11.0,F10.0,4X,F12.0,F13.0,F13.0 ) QAM 1980
2003 FORMAT(8X,A4,6X, F12.0,F11.0,F10.0,2X,F12.0,F13.0,F13.0) QAM 1985
2000 FORMAT(1H1,4X,*SEGMENT OPERATIONS SUMMARY*/5X,26(1H-) QAM 1990
1//57X,I6,5X,A6 //8X,*SEGMENT*,4X,*TRIPS*,3X,*MILES*,2(3X,*TOTAL AQAM 1995
2VAIL*),3X,*TOTAL LIFT*,5X,*TOTAL*,8X,*LOAD* QAM 2000
1,5X,*TON/MILES*,8X,*POUNDS*/5X,*FROM*,6X, QAM 2005
3 *TO*,18X,*CABIN LOAD*,5X,*TON/MILES*,5X,*UTILIZED*4X,*TON/MILES*QAM 2010
5*,5X,*FACTOR*,4X,*OVFRFLOWN*,6X,*OVERFLOWN*/ QAM 2015
5 37X,*POUNDS*,22X,*POUNDS*,7X,*MOVED*,6X,*ACHIEVED* QAM 2020
6,1X,*UPON DEPARTURE*,2X,*UPON DEPARTURE* ) QAM 2025
2001 FORMAT(5X,A4,4X,A4,F7.2 ,3X,F5.0,1X,2(3X,F11.0),2F12.0, QAM 2030
1 4X,F8.3,F14.0,2X,F14.0) QAM 2035
2004 FORMAT( 5X,*MANAGEMENT SUMMARY*/5X,18(1H-)//57X,*LOAD*, QAM 2040
13X,*RATE*,4X,*TOTAL*/19X,*V/A*,4X,*MILES*,4X,2(*TON/MILES*,1X),1X, QAM 2045
2*FACTOR*,2X,*PER*,4X,*MILEAGE*,4X,*LANDING *,2X,*TERMINAL*,3X, QAM 2050
4*TOTAL*,2(3X,*TON/MILES*)/ QAM 2055
4 5X,*ROUTE*,2X,*STOPS*,2X,*TYPE*,2X, QAM 2060
5*TRAVELED*,2X,*AVAILABLE*,3X,*MOVED*,4X,*ACHVED*,2X,*MILE*,4X, QAM 2065
6*COST*,8X, *FEES*,2(5X,*COSTS*),3X,* (AV) COST*,3X,* (MV) COST* QAM 2070
2005 FORMAT(4X,I6,2X,I4,2X,I4,1X, F9.0,1X,F10.0,1X,F9.0,2X, QAM 2075
1F6.2,1X,F7.4,1X,F10.2,1X,F9.0,12X,F8.0,1X,2F10.3) QAM 2080
2006 FORMAT(1H1,*SYSTEM CARGO SUMMARY*/1X,21(1H-)//5X,*TERMINAL*,5X, QAM 2085
1*CARGO*,2(8X,*CARGO*),9X,*CARGO*,10X,*CARGO*,10X,*CARGO* QAM 2090
2 /7X,*CODE*,5X,*DEL (LBS)*,3X, QAM 2095
2*SHIPD (LBS)*,3X, QAM 2100
2*GEN (LBS)*,3X,*TRNSLD (LBS)*,3X,*UNMOVED (LBS)*,3X,*UNSHIPD (LBS) QAM 2105
3* /5X,8H-----,3X,9H-----, QAM 2110
43X,11H-----,3X,9H-----,3X,12H-----, QAM 2115
5 2(3X,13H----- ) QAM 2120
3000 FORMAT(6X,*TOTAL* QAM 2125
1 ,2F14.0,F12.0,3F15.0) QAM 2130
2007 FORMAT(7X,A4,2F14.0,F12.0,3F15.0) QAM 2135
WRITE(6,666) QAM 2140
666 FORMAT(1H1) QAM 2145
WRITE(6,777) (KGOGN1(I),CGOGN3(I),I=1,NKGOGN) QAM 2150
777 FORMAT(4(I15,F10.0)) QAM 2155
STOP QAM 2160
END QAM 2165

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SUBROUTINE LINKS(NP,NLINK ,NPT,NPT1,LINK,ITNAM)	LNK	5
DIMENSION NPT(40),NPT1(40,20),LINK(3000),ISAVE(5),ITNAM(99)	LNK	10
WRITE(6,4000)	LNK	15
4000 FORMAT(1H1,4X,'ERROR TRACE - INCOMPLETE ROUTING*///	LNK	20
15X,'COMPLETED SEGMENTS',5X,'ORIGIN SEGMENTS ROUTED')	LNK	25
DO 10 I=1,NLINK	LNK	30
ISAVE(1)=MOD(LINK(I)/100,100)	LNK	35
ISAVE(2)=MOD(LINK(I)/10000,100)	LNK	40
ISAVE(3)=MOD(LINK(I)/1000000,100)	LNK	45
ISAVE(4)=MOD(LINK(I)/10**8,100)	LNK	50
ISAVE(5)=MOD(LINK(I),100)	LNK	55
ICNT=0	LNK	60
NSAVE=4	LNK	65
IF(ISAVE(2).GT.0) GO TO 16	LNK	70
ISAVE(2)=ISAVE(5)	LNK	75
NSAVE=1	LNK	80
GO TO 15	LNK	85
16 IF(ISAVE(3).GT.0) GO TO 17	LNK	90
NSAVE=2	LNK	95
ISAVE(3)=ISAVE(5)	LNK	100
GO TO 15	LNK	105
17 IF(ISAVE(4).GT.0) GO TO 15	LNK	110
NSAVE=3	LNK	115
ISAVE(4)=ISAVE(5)	LNK	120
15 DO 20 J=1,NSAVE	LNK	125
DO 30 K=1,NP	LNK	130
NMP=NPT(K)	LNK	135
ICK=0	LNK	140
DO 35 L=1,NMP	LNK	145
IF(ICK.EQ.0) GO TO 36	LNK	150
IF(ISAVE(J+1).NE.NPT1(K,L)) GO TO 35	LNK	155
ICNT=ICNT+1	LNK	160
GO TO 20	LNK	165
36 IF(ISAVE(J).NE.NPT1(K,L)) GO TO 35	LNK	170
ICK=1	LNK	175
35 CONTINUE	LNK	180
30 CONTINUE	LNK	185
20 CONTINUE	LNK	190
IF(NSAVE.EQ.ICNT) GO TO 10	LNK	195
NSAVE=NSAVE+1	LNK	200
DO 40 J=1,NSAVE	LNK	205
KK=ISAVE(J)	LNK	210
40 ISAVE(J)=ITNAM(KK)	LNK	215
WRITE(6,2000) ICNT, (ISAVE(K),K=1,NSAVE)	LNK	220
2000 FORMAT(13X,I5,7X,5A4)	LNK	225
10 CONTINUE	LNK	230
RETURN	LNK	235
END	LNK	240

SUBROUTINE TABLE(NTERM,ITNAM,NCGN,KG,CG,IDENT)	TAB	5
DIMENSION LINE(100,3),ITNAM(99),KG(7000),CG(7000),IDENT(12)	TAB	10
1,XLINE(100),SMASH(99),SMOL(99)	TAB	15
DO 666 I=1,NTERM	TAB	20
SM' (I)=0	TAB	25
666 SMOL(I)=0	TAB	30
SMO=0	TAB	35
SMG=0	TAB	40
WRITE(6,2000) (IDENT(I),I=1,12)	TAB	45
2000 FORMAT(1H,59X,12A6///)	TAB	50
ICHECK=0	TAB	55
LIM1=1	TAB	60
LIM2=6	TAB	65
400 IF(NTERM.LT.LIM2) LIM2=NTERM	TAB	70
IF(ICHECK.EQ.0) GO TO 10	TAB	75
WRITE(6,2001) (ITNAM(I),I=LIM1,LIM2)	TAB	80
2001 FORMAT(1H,1X,////5X,6(*+,7X,A4,7X))	TAB	85
WRITE(6,2003)	TAB	90
GO TO 15	TAB	95
10 WRITE(6,4002) (ITNAM(I),I=LIM1,LIM2)	TAB	100
4002 FORMAT(5X,6(*+,7X,A4,7X))	TAB	105
WRITE(6,2003)	TAB	110
15 DO 100 I=1,NTERM	TAB	115
DO 150 KK=1,NTERM	TAB	120
XLINE(KK)=0	TAB	125
DO 150 JJ=1,3	TAB	130
150 LINE(KK,JJ)=0	TAB	135
DO 200 J=LIM1,LIM2	TAB	140
IF(I.EQ.J) GO TO 200	TAB	145
JCHECK=J+I*100	TAB	150
DO 300 K=1,NCGN	TAB	155
IF(CG(K).LE.0.0) GO TO 300	TAB	160
IF(JCHECK.NE.MOD(KG(K),10000)) GO TO 300	TAB	165
XLINE(J)=XLINE(J)+CG(K)	TAB	170
ID3=MOD(KG(K)/10**8,100)	TAB	175
IF(ID3.GT.0) LINE(J,3)=ITNAM(ID3)	TAB	180
ID1=MOD(KG(K)/10000,100)	TAB	185
ID2=MOD(KG(K)/1000000,100)	TAB	190
IF(ID1.GT.0) LINE(J,1)=ITNAM(ID1)	TAB	195
IF(ID2.GT.0) LINE(J,2)=ITNAM(ID2)	TAB	200
SMASH(I)=SMASH(I)+CG(K)	TAB	205
SMOL(J)=SMOL(J)+CG(K)	TAB	210
SMG=SMG+CG(K)	TAB	215
SMO=SMO+CG(K)	TAB	220
300 CONTINUE	TAB	225
200 CONTINUE	TAB	230
IF(LIM2.EQ.NTERM) GO TO 410	TAB	235
WRITE(6,2002) ITNAM(I), (XLINE(J), (LINE(J,K),K=1,3),J=LIM1,LIM2)	TAB	240
2002 FORMAT(1X,A4,6(1H, F6.1,3A4))	TAB	245
WRITE(6,2003)	TAB	250
2003 FORMAT(5X,*+, ,18(6H-----),*----*)	TAB	255
GO TO 100	TAB	260
410 WRITE(6,2002) ITNAM(I), (XLINE(J), (LINE(J,K),K=1,3),J=LIM1,LIM2)	TAB	265
WRITE(6,2003)	TAB	270

100 CONTINUE	TAB 275
IF(LIM2.NE.NTERM) GO TO 160	TAB 280
WRITE(6,2004) (ITNAM(I),SMNH(I),SMOL(I),I=1,NTERM)	TAB 285
WRITE(6,2005) SMG,SMD	TAB 290
2004 FORMAT(1H1,4X,*CARGO GEN/DEL SUMMARY*//5X,*TERMINAL GENERATED*	TAB 295
1* DELIVERED*/(9X,A4,2F12.1)//)	TAB 300
2005 FORMAT(5X,*TOTAL*,3X,2F12.1)	TAB 305
RETURN	TAB 310
160 LIM1=LIM2+1	TAB 315
LIM2=LIM1+5	TAB 320
ICHECK=1	TAB 325
GO TO 400	TAB 330
END	TAB 335

APPENDIX B

SAMPLE COMPUTER RUNS

Proposed QUICKTRANS transport network of October 1975 is given as sample run. Figure 2 is a related network diagram of sample.

QUICKTRANS STRUCTURE FY 75

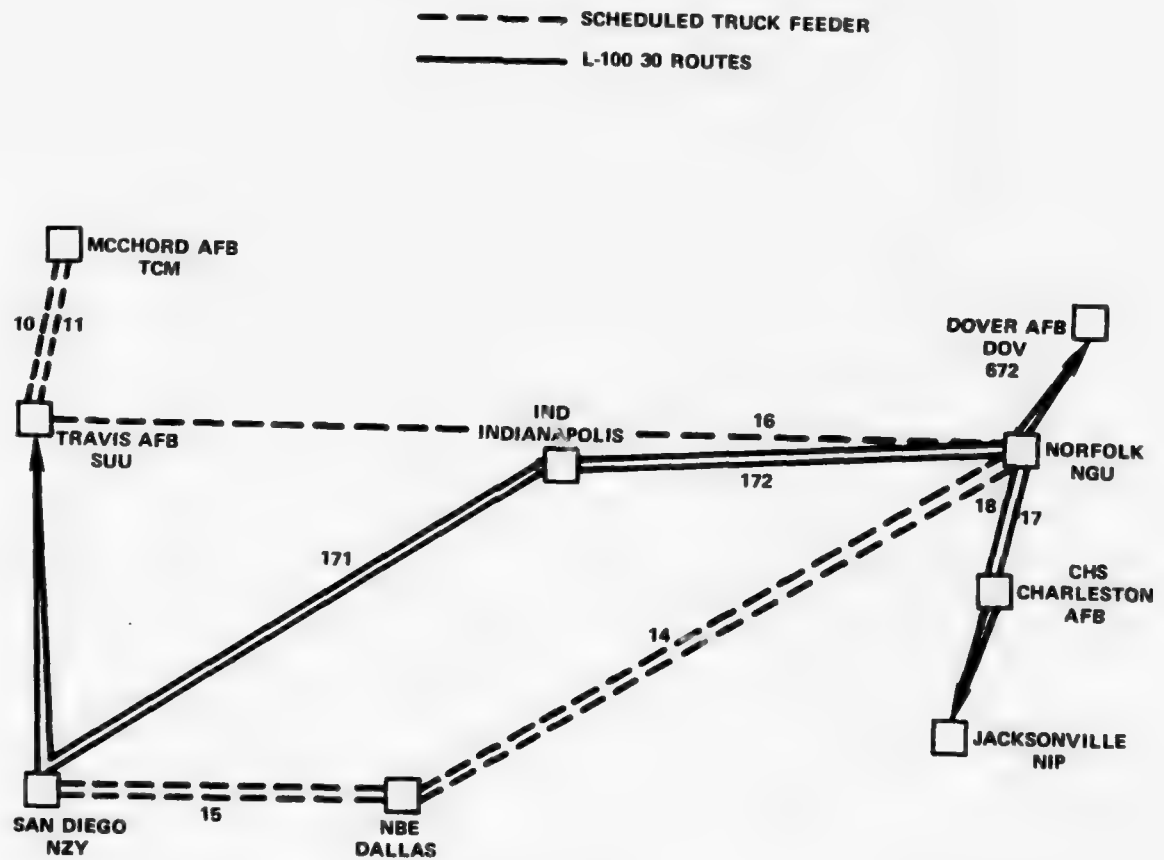


Figure 2 - QUICKTRANS Route Diagram

JACK CUNNINGHAM 30 OCT 1975 (TRUCKS/AIRCRAFT)

QUICKTRANS AIR-LIFT MODEL
(QUAM)

SYSTEM CARGO SUMMARY

TERMINAL CODE	CARGO DEL (LBS)	CARGO SHIPD (LBS)	CARGO GEN (LBS)	CARGO TRANSLO (LBS)	CARGO UNMOVED (LBS)	CARGO UNSHIPD (LBS)
00V	1307486.	946372.	946372.	0.	0.	0.
NGU	2133600.	2264304.	2264304.	1607302.	0.	0.
IND	166076.	182048.	182048.	0.	0.	0.
CHS	680886.	658168.	658168.	0.	0.	0.
NIP	686196.	541280.	541280.	264250.	0.	363682.
COF	0.	0.	12008.	0.	12000.	0.
HQX	0.	0.	48508.	0.	48500.	0.
NPA	0.	0.	257040.	0.	257040.	0.
NBE	183512.	192000.	192000.	0.	0.	0.
NZY	1355384.	1457608.	1457608.	79948.	0.	0.
SUU	1643794.	2069840.	2069840.	828782.	0.	0.
TCM	855802.	683620.	683620.	0.	0.	0.
TOTAL	8932362.	8986584.	9296044.	2792274.	389548.	363682.

DOV	0.0	•	209.5	•	12.3	•	50.1 NGU	•	27.6 NGU	•	1.0 NGU NIP
NGU	300.1	•	9.0	•	12.9	•	144.3	•	148.1	•	9.0 NIP
IND	11.1 NGU	•	24.4	•	0.0	•	0.9	•	4.4	•	0.0
CHS	88.5	•	97.0	•	6.1 NGU	•	0.0	•	6.1	•	4.9 NIP
NIP	28.6	•	137.4	•	2.7 NGU	•	8.2	•	0.0	•	0.0
COF	0.0	•	•	•	0.0	•	•	•	0.0	•	0.0
WQK	1.5 NIP	•	11.3 NIP	•	•	•	•	•	0.0	•	0.0
NPA	17.6 NIP	•	47.9 NIP	•	1.3 NIP NGU	•	15.1 NIP	•	0.0	•	0.0
NBE	12.0 NGU	•	19.0	•	1.0 NGU	•	1.0 NGU	•	16.0 NGU	•	0.0
WZY	49.3 NGU	•	220.6	•	13.7	•	31.5	•	35.6	•	4.1 NIP
SUU	121.0 NGU	•	244.2	•	24.4	•	66.6 AGU	•	59.9 NGU	•	13.3 NGU NIP
TCH	23.9 SUU NGU	•	55.9 SUU	•	8.0 SUU NGU	•	13.3 SUU NGU	•	5.3 SUU NGU	•	2.7 SUU NGU NIP

	+	NQX	+	NPA	+	NBE	+	NZY	+	SUU	+	TCM									
DOV.		1.0	MGU	NIP	.	16.4	MGU	NIP	.	2.0	MGU	.	63.4	.	62.3	.	27.6	SUU			
MGU.		9.0	NIP	.	43.0	NIP	.	18.0	.	189.3	.	198.4	.	59.2	SUU						
TND.		0.0	.	1.1	NIP	.	1.1	MGU	.	20.0	.	11.1	.	8.9	SUU						
GNS.		0.0	.	3.6	NIP	.	0.0	.	17.0	MGU	.	61.9	MGU	.	48.8	MGU	SUU				
NIP.		0.0	.	0.0	.	19.0	MGU	.	29.9	MGU	.	34.0	MGU	.	10.9	MGU	SUU				
COF.		0.0	.	0.0	.	0.0	.	1.5	NIP	MGU	.	3.0	NIP	MGU	.	0.0					
NGY.		0.0	.	0.0	.	0.0	.	5.3	NIP	MGU	.	.0	NIP	MGU	.	0.0					
NPA.		0.0	.	0.0	.	12.6	NIP	MGU	.	15.1	NIP	MGU	.	15.1	NIP	MGU	.	3.0	NIP	MGU	SUU
NBE.		0.0	.	14.0	MGU	NIP	.	0.0	.	0.0	.	17.0	NZY	.	5.0	NZY	SUU				
NZY.		5.5	NIP	.	26.0	NIP	.	11.0	.	0.0	.	253.5	.	78.1	SUU						
SUU.		1.1	NIP	.	20.0	NIP	.	26.6	NZY	.	263.1	.	0.0	.	194.3						
TCM.		0.0	.	1.3	SUU	MGU	NIP.	1.3	SUU	NZY	.	65.2	SUU	.	164.9	.	0.0				

CARGO GEN/DEL SUMMARY

TERMINAL DOV	GENERATED 473.2	DELIVERED 653.7
NGU	1132.2	1066.0
IND	91.0	83.0
CHS	325.1	340.4
NIP	270.6	303.1
COF	6.0	35.0
WIX	20.3	16.6
HPA	128.5	130.2
NBE	96.0	91.8
NZY	728.8	677.7
SUU	1034.5	821.9
TCM	341.8	427.8
TOTAL	4648.0	4648.0

ERROR TRACE - INCOMPLETE ROUTING

COMPLETED SEGMENTS	ORIGIN	SEGMENTS ROUTED
2	NBE NGU NIP NPA	
2	NPA NIP NGU NBE	
2	DOV NGU NIP COF	
2	DOV NGU NIP NQX	
2	DOV NGU NIP NPA	
1	NGU NIP COF	
1	NGU NIP NQX	
1	NGU NIP NPA	
1	IND NIP NPA	
1	CHS NIP COF	
1	CHS NIP NPA	
1	COF NIP NGU	
1	NQX NIP DOV	
1	NQX NIP NGU	
2	NQX NIP NGU IND	
1	NQX NIP CHS	
2	NQX NIP NGU NZY	
2	NQX NIP NGU SUU	
1	NPA NIP DOV	
1	NPA NIP NGU	
2	NPA NIP NGU IND	
1	NPA NIP CHS	
2	NPA NIP NGU NZY	
2	NPA NIP NGU SUU	
3	NPA NIP NGU SUU TCM	
1	NZY NIP COF	
1	NZY NIP NQX	
1	NZY NIP NPA	
1	COF NIP CHS	
2	COF NIP NGU NZY	
2	COF NIP NGU SUU	
2	SUU NGU NIP COF	
1	SUU NIP NQX	
1	SUU NIP NPA	
3	TCM SUU NGU NIP COF	
3	TCM SUU NGU NIP NPA	

10 TRUCK

SECTION FROM	TRIPS	MILES	TOTAL AVAIL CABIN LOAD POUNDS	TOTAL AVAIL TON/MILES	TOTAL LIFT UTILIZED POUNDS	TOTAL TON/MILES MOVED	LOAD FACTOR ACHIEVED	TON/MILES OVERFLOW UPON DEPARTURE	POUNDS OVERFLOW UPON DEPARTURE
SUU	30.70	650.	1161000.	377325.	855502.	278038.	73.687	0.	0.
TOTAL		650.	1161000.	377325.	855502.	278038.	73.687	0.	0.

TERMINAL	OFF LOAD POUNDS	ON LOAD POUNDS	THRU POUNDS	DEPART POUNDS	DELVY UNLOAD POUNDS	TRANSLAND POUNDS
SUU	0.	855502.	855502.	855502.	0.	0.
TCM	855502.	0.	0.	0.	855502.	0.
TOTAL	855502.	855502.	855502.	855502.	855502.	0.

SEGMENT OPERATIONS SUMMARY

SEGMENT		TRIPS	MILES	11 TRUCK										
FROM	TO			TOTAL AVAIL CABIN LOAD POUNDS	TOTAL AVAIL TON/MILES	TOTAL LIFT UTILIZED POUNDS	TOTAL TON/MILES MOVED	LOAD FACTOR ACHIEVED	TON/MILES OVERFLOWN UPON DEPARTURE	POUNDS OVERFLOWN UPON DEPARTURE				
TCM	SUU	25.00	650.	774,000.	251550.	683620.	222177.	88.323	28936.	64428.				
TOTAL			650.	774,000.	251550.	683620.	222177.	88.323	28936.	64428.				

TERMINAL	OFF LOAD POUNDS	ON LOAD POUNDS	THRU POUNDS	DEPART POUNDS	DELVY UNLOAD POUNDS	TRANSLOAD POUNDS
TCM	683620.	683620.	683620.	683620.	0.	0.
SUU	683620.	0.	0.	0.	329848.	353788.
TOTAL	683620.	683620.	683620.	683620.	329848.	353788.

SEGMENT OPERATIONS SUMMARY

		14 TRUCK									
SEGMENT FROM	TO	TRIPS	MILES	TOTAL AVAIL CABIN LOAD POUNDS	TOTAL AVAIL TON/MILES	TOTAL LIFT UTILIZED POUNDS	TOTAL TON/MILES MOVED	LOAD FACTOR ACHIEVED	TON/MILES OVERFLOWN UPON DEPARTURE	POUNDS OVERFLOWN UPON DEPARTURE	
NZY	NBE	12.98	1208.	387880.	233748.	332859.	281847.	66.810	14848.	23259.	
NBE	NGU	12.90	1239.	387880.	239747.	386999.	239746.	180.800	47949.	77399.	
TOTAL			2447.	774080.	473495.	719858.	448793.	93.894	61997.	188658.	

TERMINAL	OFF LOAD POUNDS	ON LOAD POUNDS	THRU POUNDS	DEPART POUNDS	DELVY UNLOAD POUNDS	TRANSLOAD POUNDS
NZY	8.	332859.	332859.	332859.	0.	0.
NBE	77868.	132088.	254999.	386999.	77868.	0.
NGU	386999.	0.	0.	0.	229500.	157499.

TOTAL	464859.	464859.	587858.	719858.	307368.	157499.
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SEGMENT OPERATIONS SUMMARY

SEGMENT		TRIPS	MILES	TOTAL AVAIL CABIN LOAD POUNDS	TOTAL AVAIL TON/MILES	TOTAL LIFT UTILIZED POUNDS	TOTAL TON/MILES MOVED	LOAD FACTOR ACHIEVED	TON/MILES OVERFLOWN UPON DEPARTURE	POUNDS OVERFLOWN UPON DEPARTURE
FROM	TO									
NGU	MBE	25.00	1239.	774000.	479493.	621868.	385247.	88.345	1853.	2660.
MBE	MZY	25.00	1208.	774000.	467496.	576216.	348834.	74.447	0.	0.
TOTAL			2447.	1548000.	946989.	1198084.	733282.	77.433	1853.	2660.

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TERMINAL	OFF LOAD POUNDS	ON LOAD POUNDS	THRU POUNDS	DEPART POUNDS	DELVY UNLOAD POUNDS	TRANSLOAD POUNDS
NGU	0.	621868.	621868.	621868.	0.	0.
MBE	185652.	60000.	516216.	576216.	185652.	0.
MZY	576216.	0.	0.	0.	532216.	44880.
TOTAL	681868.	681868.	1138084.	1198084.	637868.	44880.

SEGMENT OPERATIONS SUMMARY

		16 TRUCK								
SEGMENT FROM	TO	TRIPS	MILES	TOTAL AVAIL CABIN LOAD POUNDS	TOTAL AVAIL TON/MILES	TOTAL LIFT UTILIZED POUNDS	TOTAL TON/MILES MOVED	LOAD FACTOR ACHIEVED UPON DEPARTURE	TON/MILES OVERFLOWN UPON DEPARTURE	POUNDS OVERFLOWN UPON DEPARTURE
SUU	NGU	25.60	2543.	774000.	984141.	773999.	984140.	100.000	196827.	194799.
TOTAL			2543.	774000.	984141.	773999.	984140.	100.000	196827.	194799.

TERMINAL	OFF LOAD POUNDS	ON LOAD POUNDS	THRU POUNDS	DEPART POUNDS	DELVY UNLOAD POUNDS	TRANSLOAD POUNDS
SUU	0.	773999.	773999.	773999.	0.	0.
NGU	773999.	0.	0.	0.	387800.	386999.

TOTAL	773999.	773999.	773999.	773999.	387800.	386999.
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SEGMENT OPERATIONS SUMMARY

SEGMENT FROM	TO	TRIPS	MILES	17 TRUCK						LOAD FACTOR ACHIEVED	TON/MILES OVERFLOWN UPON DEPARTURE	POUNDS OVERFLOWN UPON DEPARTURE
				TOTAL AVAIL CABIN LOAD POUNDS	TOTAL AVAIL TON/MILES	TOTAL LIFT UTILIZED POUNDS	TOTAL TON/MILES MOVED	TOTAL TON/MILES OVERFLOWN UPON DEPARTURE	TOTAL TON/MILES OVERFLOWN UPON DEPARTURE			
NGU	CMS	21.60	357.	646000.	115668.	550468.	98259.	5724.	84.949	84.949	5724.	32868.
TOTAL			357.	646000.	115668.	550468.	98259.	5724.				

TERMINAL	OFF LOAD POUNDS	ON LOAD POUNDS	THRU POUNDS	DEPART POUNDS	DELIVY UNLOAD POUNDS	TRANSLOAD POUNDS
NGU	550468.	550468.	550468.	550468.	550468.	0.
CMS	0.	0.	0.	0.	0.	0.
TOTAL	550468.	550468.	550468.	550468.	550468.	0.

SEGMENT OPERATIONS SUMMARY

SEGMENT FROM	TRIPS	MILES	18 TRUCK				LOAD FACTOR ACHIEVED	TON/MILES OVERFLOW UPON DEPARTURE	POUNDS OVERFLOW UPON DEPARTURE
			TOTAL AVAIL TON/MILES	TOTAL AVAIL POUNDS	TOTAL LIFT UTILIZED POUNDS	TOTAL TON/MILES MOVED			
CHS	21.60	157.	115668.	648000.	443958.	79247.	68.512	0.	0.
TOTAL		357.	115668.	648000.	443958.	79247.	68.512	0.	0.

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TERMINAL	OFF LOAD POUNDS	ON LOAD POUNDS	THRU POUNDS	DEPART POUNDS	DELVY UNLOAD POUNDS	TRANSLOAD POUNDS
CHS	0.	443958.	443958.	443958.	0.	0.
NGU	443958.	0.	0.	0.	194080.	249878.
TOTAL	443958.	443958.	443958.	443958.	194080.	249878.

SEGMENT OPERATIONS SUMMARY

SEGMENT		TRIPS	MILES	TOTAL AVAIL CABIN LOAD POUNDS	TOTAL AVAIL TON/MILES	TOTAL LIFT UTILIZED POUNDS	TOTAL TON/MILES MOVED	LOAD FACTOR ACHIEVED	TON/MILES OVERFLOW UPON DEPARTURE	POUNDS OVERFLOW UPON DEPARTURE
FROM	TO									
WIP CMS NGU	CMS	30.40	287.	1322400.	136868.	850820.	88060.	64.339	0.	0.
	NGU	30.40	357.	1322400.	236048.	978358.	174637.	73.984	8.	8.
	DOV	30.40	169.	1322400.	111743.	1307406.	110476.	98.666	21082.	249486.
TOTAL			733.	3967200.	484660.	3136564.	373173.	76.997	21882.	249486.

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TERMINAL	OFF LOAD POUNDS	ON LOAD POUNDS	THRU POUNDS	DEPART POUNDS	DELVY UNLOAD POUNDS	TRANSLOAD POUNDS				
WIP	0.	850820.	850820.	850820.	0.	0.				
CMS	49568.	177098.	881260.	978358.	49568.	0.				
NGU	705868.	1834908.	272498.	1307406.	394480.	311380.				
DOV	1307406.	0.	0.	0.	1307406.	0.				
TOTAL	2062826.	2062826.	1924570.	3136584.	1751446.	311380.				

SEGMENT OPERATIONS SUMMARY

SEGMENT FROM	TO	TRIPS	MILES	TOTAL AVAIL CABIN LOAD POUNDS	TOTAL AVAIL TON/MILES	TOTAL LIFT UTILIZED POUNDS	TOTAL TON/MILES MOVED	LOAD FACTOR ACHIEVED	TON/MILES OVERFLCHM UPON DEPARTURE	POUNDS OVERFLOWN UPON DEPARTURE
SUU	NZY	30.40	498.	1322400.	329276.	1260321.	313820.	95.306	50398.	202481.
NZY	IND	30.40	1852.	1322400.	1224542.	1065582.	986729.	80.579	7095.	7662.
IND	NGU	30.40	588.	1322400.	380786.	1091462.	320890.	82.536	9861.	33542.
NGU	CMS	30.40	357.	1322400.	236048.	1021548.	182346.	77.250	0.	0.
CMS	MIP	30.40	207.	1322400.	136868.	969800.	100383.	73.342	0.	0.
TOTAL			3582.	6612000.	2315522.	5408793.	1904168.	82.235	67354.	243685.

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TERMINAL	OFF LOAD POUNDS	ON LOAD POUNDS	THRU POUNDS	DEPART POUNDS	DELVY UNLOAD POUNDS	TRANSLAD POUNDS
SUU	0.	1260321.	1260321.	1260321.	0.	0.
NZY	712428.	517681.	547901.	1065582.	656480.	55948.
IND	76245.	102120.	989342.	1091462.	76240.	0.
NGU	814922.	745008.	276540.	1021548.	509600.	305322.
CMS	80780.	29112.	940768.	969800.	80780.	0.
MIP	969880.	0.	0.	0.	606198.	363682.
TOTAL	2654242.	2654242.	4014872.	5408793.	1929298.	724944.

SEGMENT OPERATIONS SUMMARY

SEGMENT		TRIPS	MILES	TOTAL AVAIL CABIN LOAD POUNDS	TOTAL AVAIL TON/MILES	171 L-100		TOTAL TON/MILES MOVED	LOAD FACTOR ACHIEVED	TON/MILES OVERFLOW UPON DEPARTURE	POUNDS OVERFLOW UPON DEPARTURE
FROM	TO					TOTAL AVAIL TON/MILES	TOTAL LIFT UTILIZED POUNDS				
DOV	MGU	38.40	169.	1322400.	111743.	111743.	946372.	79960.	71.565	0.	0.
MGU	IMD	38.40	580.	1322400.	388786.	388786.	1250402.	387642.	94.562	56613.	192562.
IMD	NZY	38.40	1052.	1322400.	1224542.	1224542.	1240564.	1146762.	93.812	169120.	182644.
NZY	SUU	38.40	498.	1322400.	329278.	329278.	1780956.	443458.	134.676	100036.	723036.
TOTAL			3107.	5209600.	2054340.	2054340.	5210374.	2039030.	99.293	405770.	1090242.

TERMINAL	OFF LOAD		ON LOAD		THRU		DEPART		DELVY UNLOAD		TRANSLAD	
	POUNDS		POUNDS		POUNDS		POUNDS		POUNDS		POUNDS	
DOV	0.	0.	946372.	946372.	946372.	946372.	946372.	0.	0.	0.	0.	0.
MGU	615244.	0.	919354.	331128.	331128.	1250402.	1250402.	419420.	196224.	196224.	0.	0.
IMD	89838.	0.	79920.	1160644.	1160644.	1240564.	1240564.	89138.	0.	0.	0.	0.
NZY	166688.	0.	707000.	1073876.	1073876.	1780956.	1780956.	166486.	0.	0.	0.	0.
SUU	1708956.	0.	0.	0.	0.	1313954.	1313954.	0.	0.	0.	0.	0.
TOTAL		2652726.	2652726.	3512020.	3512020.	5210374.	5210374.	1969580.	663226.	663226.	0.	0.

AIRCRAFT REPORT

MANAGEMENT SUMMARY

ROUTE	STOPS	V/A TYPE	MILES TRAVELED	TON/MILS AVAILABLE	TON/MILS MOVED	LOAD FACTOR ACHVD	RATE PER MILE	TOTAL MILEAGE COST	LANDING FEES	TERMINAL COSTS	TOTAL COSTS	TON/MILES (AV) COST	TON/MILES (HW) COST
672	91	1	22243.	484660.	373173.	77.00	3.5324	78713.18	22750.		101463.	.209	.272
172	151	1	106461.	2315522.	1904168.	82.23	3.5324	376062.13	37750.		413812.	.179	.217
171	121	1	94453.	2054348.	2039830.	99.29	3.5324	333645.07	30250.		363895.	.177	.178
TOTAL	363.		223197.	4854530.	4317171.	88.93		788420.38	90750.		879170.	.181	.204

AIRCRAFT COST ADJUSTMENT FACTOR = .038.COST INCREASE = 33408.474. TOTAL AIRCRAFT COST = 912578.851

TRUCK REPORT

MANAGEMENT SUMMARY

ROUTE	STOPS	V/A TYPE	MILES TRAVELED	TON/MILES AVAILABLE	TON/MILES MOVED	LOAD FACTOR ACHVED	RATE PER MILE	TOTAL MILEAGE COST	LANDING FEES	TERMINAL COSTS	TOTAL COSTS	TON/MILES (AV) COST	TON/MILES (MW) COST
10	38	2	25155.	377325.	278036.	73.69	1.0769	27090.00	0.		27090.	.072	.097
11	25	2	16778.	251550.	222177.	88.32	1.0769	18068.00	0.		18068.	.072	.081
14	25	3	31566.	473495.	440793.	93.09	.8173	25808.00	0.		25808.	.084	.059
15	51	3	63133.	946389.	733282.	77.43	.8173	51608.00	0.		51608.	.084	.078
16	25	3	65609.	984141.	984140.	100.00	.7865	51608.00	0.		51608.	.082	.052
17	21	2	7711.	115668.	98259.	84.95	1.9608	15128.00	0.		15128.	.131	.154
18	21	2	7711.	115668.	79247.	68.51	1.9608	15128.00	0.		15128.	.131	.191
TOTAL	286.		217656.	3264836.	2835934.	86.86		204398.00	0.		284398.	.063	.072

MANAGEMENT SUMMARY

V/A	STOPS	MILES TRAVELED	TON/MILES AVAILABLE	TON/MILES MOVED	LOAD FACTOR ACHVED	RATE PER MILE	TOTAL MILEAGE COST	LANDING FEES	TERMINAL COSTS	TOTAL COSTS	TON/MILES (AV) COST	TON/MILES (HW) COST
L-100	363.	223197.	4854530.	4317171.	88.93	3.5324	788420.38	90750.		879170.	.101	.284
TRUCK	105.	57347.	860211.	677720.	78.79	1.9608	75390.00	0.		75390.	.111	.111
TRUCK	101.	160308.	2404625.	2158214.	89.75	.7865	129000.00	0.	488833.6	129000.	.054	.060
TOTAL	569.	440853.	8119366.	7153104.	88.10	2.2520	992810.38	90750.	488833.	1605802.	.198	.224

TOTAL POUNDS GENERATED =	9296044.00
TOTAL POUNDS SHIPPED =	11824068.00
TOTAL POUNDS DELIVERED =	8932162.00
TOTAL POUNDS TRANSLOADED =	2792274.00
TOTAL SYSTEM COST (IN DOLLARS) =	1605801.8506
TOTAL COST PER TON/MILE =	.2245
TOTAL COST PER TON =	359.5470

20901	0.	902	0.	20903	0.	20904	0.
20905	0.	5020908	0.	910	0.	100911	0.
11100912	0.	20109	0.	209	0.	20389	0.
20509	0.	2050809	25200.	1009	0.	101109	0.
10111209	0.	1211	0.	102	0.	103	0.
20104	0.	20105	0.	5020106	0.	5020187	0.
5020108	0.	110	0.	111	0.	110112	0.
203	0.	204	0.	201	0.	205	0.
50206	0.	50207	0.	50208	0.	218	0.
211	0.	110212	0.	20301	0.	302	0.
304	0.	305	0.	50308	0.	311	0.
310	0.	110312	0.	401	0.	402	0.
20403	0.	605	0.	50406	0.	50408	0.
20410	0.	20411	0.	11020412	0.	501	0.
502	0.	20503	0.	504	0.	20510	0.
20511	0.	11020512	0.	50602	1500.	50701	3000.
50702	22500.	2050703	1500.	50704	1500.	2050710	10500.
2050711	1500.	50801	35200.	50802	95760.	2050803	2520.
50804	30240.	2050810	30240.	2050811	30240.	50812	7560.
21001	0.	1002	0.	1003	0.	1004	0.
1005	0.	51006	0.	51007	0.	51008	0.
1011	0.	111012	0.	21101	0.	50604	1500.
2050610	3000.	2050611	6000.	1102	0.	1103	0.
21104	0.	21105	0.	5021106	0.	51107	0.
51108	0.	1110	0.	1112	0.	2111201	0.
111202	0.	2111203	0.	2111204	0.	2111205	0.
111206	0.	111208	0.	111210	0.	10200000001	0.
10200000003	0.	10200000004	0.	10200000005	0.	10200050000	0.
5000000008	36000.	11000000011	0.	11000110000	0.	1100000012	0.
10200000009	0.	10200000009	0.	10200000009	0.	105000020000	0.
200000009	0.	11000000009	0.	11100100000	0.	1000000009	0.
10200000004	0.	10200000005	0.	10200050000	0.	5000000006	2044.
10200050000	0.	5000000007	2044.	10200050000	0.	5000000008	32704.
1110000012	0.	10500000006	18032.	10500000007	18032.	10500000008	87584.
1100000012	0.	10200000001	0.	10500000008	2220.	11100000012	0.
10200000003	0.	10500000006	9704.	10500000008	7270.	10200000018	0.
10200000011	0.	10200110000	0.	1100000012	0.	10200000003	0.
10200000010	0.	10200000011	0.	10200110000	0.	1100000012	0.
10500000002	0.	10500000001	0.	10500000002	0.	105000020000	0.
200000003	0.	10500000004	0.	105000020000	0.	2000000010	0.
10500020000	0.	200000011	0.	10500000004	0.	10500000002	0.
10500020000	0.	200000003	0.	10500000004	0.	105000020000	0.
200000010	0.	10500020000	0.	200000011	0.	105000020000	0.
200110000	0.	11100000012	0.	10200000001	0.	10500000006	8220.
10500000007	10960.	10500000008	52060.	11100000012	0.	10500000001	0.
10500000004	0.	10500020000	0.	200000010	0.	105000020000	0.
200000011	0.	10200000004	0.	10200000005	0.	10200050000	0.
500000006	26640.	10500000007	2220.	10500000008	39960.	11100020000	0.
200000001	0.	11100000002	0.	11100020000	0.	200000003	0.
11100020000	0.	200000004	0.	11100020000	0.	200000005	0.
11100020000	0.	200050000	0.	10500000006	5320.	111000020000	0.
200050000	0.	10500000008	2660.	11100000010	0.		

